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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/776,184	02/12/2004	Takao Ohno	Q79839	3094

23373 7590 04/05/2006

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EXAMINER	
VO, HAI	

ART UNIT	PAPER NUMBER
1771	

DATE MAILED: 04/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/776,184	OHNO ET AL.	
	Examiner	Art Unit	
	Hai Vo	1771	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 January 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 3-34* is/are pending in the application.

4a) Of the above claim(s) *8-32* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1, 3-7, 33 and 34* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

1. All of the art rejections are maintained.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1, 3, 4, 33 and 34 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Daido et al (US 6,291,106) substantially as set forth in the 10/14/2005 Office Action. The art rejections based on Daido et al (US 6,291,106) have been maintained for the following reasons. Applicants argue that the present invention is directed to a homogeneous porous film composed of one polymer while Daido relates to a non-woven fabric sheet composed of two different materials of crystallized and non-crystallized polymers. The arguments are not found persuasive for patentability. While it is true that Daido discloses a porous reinforcing thin film

composed of two different materials of crystallized and non-crystallized polymers, these two polymers are made from polymetaphenylene isophthalamide (column 4, lines 65-66, example 1). Therefore, the final structure of the porous reinforcing thin film contains only one kind of the polymer which reads on Applicants' polymetaphenylene isophthalamide based polymer porous film. Applicants argue that Daido does not teach the film having a specific Young's modulus of 200-800 (kgf/mm2)/(g/cc). The examiner disagrees. Daido teaches the polymetaphenylene isophthalamide having a Young's modulus of at least 300 kg/mm2 (column 6, lines 53-55) and since the porous reinforcing thin film has a density of 0.53 g/cc within the claimed range (example 1), it is the examiner's position that the specific Young's modulus would fall within the claimed range. Applicants argue that Daido does not teach the film having a specific cross-sectional pore laminar coefficient because it has not pores in the sheet cross-section. The arguments appear to be flawed and inaccurate because the porous reinforcing thin film has a porosity of 62% (example 1), which indicates the presence of the pores in the film cross-section. The maximum diameter of the pores is dictated by the porosity and density and since the porosity and density are within the claimed range, it is the examiner's position that the maximum diameter of the pores would fall within the claimed range. Similarly, since the specific cross-sectional pore laminar coefficient depends upon the porosity, thickness and maximum diameter of the pores, it is not seen that the specific cross-sectional pore laminar coefficient could have been outside the claimed

range as the porosity, thickness and maximum diameter of the pores are within the claimed ranges. It appears that the porous reinforcing thin film made from polymetaphenylene isophthalamide, having gas permeability, porosity, thickness, density, specific Young's modulus and specific cross-sectional pore laminar coefficient within the claimed ranges, it is not seen that the porous resin film of Daido would have performed differently than that of the present invention in terms of gas permeability retention, i.e., gas permeability retained after heat treatment at 350°C for 10 mins because like material has like property.

5. Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Daido et al (US 6,291,106) in view of Shinohara et al (US 6,447,958) substantially as set forth in the 10/14/2005 Office Action. The art rejections have been maintained for the following reasons. Applicants argue that since Shinohara differs from the present invention in the point that Shinohara preferred a para-aramid to an meta-aramid, the combination of Daido and Shinohara does not suggest the claimed subject matter. The examiner respectfully disagrees. The arguments are not found persuasive for patentability because the preference that is given to the para-aramid from the view points of tendency to become porous does not make the combination of Daido and Shinohara unobvious or less obvious. As a matter of fact, the porous film made from meta-aramid was already taught by Daido and Shinohara is relied on as a secondary reference for rectifying the missing ceramic powder in the Daido reference. Accordingly, the combination of the two cited references achieved the claimed invention.

6. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Daido et al (US 6,291,106) in view of Shinohara et al (US 6,447,958) as applied to claim 5 above, further in view of Tsutsumi et al (US 5,571,875) substantially as set forth in the 10/14/2005 Office Action. The art rejections have been maintained for the following reasons. Applicants argue that Tsutsumi does not teach a combination of a heat resistant resin of m-aramid and whisker to form a porous film, the combination of Daido, Shinohara and Tsutsumi does not render the claimed invention obvious. The examiner disagrees. Shinohara discloses a porous film as a battery separator comprising a heat resistant polymer and a ceramic powder wherein the heat resistant polymer includes meta-oriented aromatic polyamide, para-oriented aromatic polyamide and polyimide (column 3, lines 40-55 and column 4, lines 30-40). Shinohara does not specifically disclose the L/D ratio of a ceramic powder. Tsutsumi teaches a polyimide based resin composition that is excellent in processibility and has improved mechanical characteristics, heat resistance and chemical resistance (column 3, lines 5-10). Tsutsumi teaches the polyimide based resin composition comprising a whisker having a fiber length L from 5 to 50 microns and a fiber diameter D from 0.05 to 1 microns within the claimed range (column 22, lines 30-33). Such a dimension would have been recognized by one skilled in the art to impart the mechanical strength and dimensional stability while maintaining an ease of the film processing. As such, in the absence of unexpected results, it would have been obvious to one having ordinary skill in the art at the time the invention was made to employ the ceramic

powder having the L/D ratio as taught by Tsutsumi motivated by the desire to impart mechanical strength and dimensional stability while maintaining an ease of the film processing. It is believed that the motivation to combine these references is strong and sufficient to suggest a reasonable expectation of success and therefore the art rejections are sustained.

7. Claims 1, 3-6, 33, and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shinohara et al (US 6,447,958) in view of Cieslak et al (US 5,002,843) substantially as set forth in the 10/14/2005 Office Action.
8. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shinohara et al (US 6,447,958) in view of Cieslak et al (US 5,002,843) as applied to claim 6 above, further in view of Tsutsumi et al (US 5,571,875) substantially as set forth in the 10/14/2005 Office Action.

The art rejections based on Shinohara have been maintained for the following reasons. Applicants argue that since Cieslak discloses a separator composed of an m-aramid fiber mat but does not describe that a porous film of an m-aramid is useful as a separator, therefore a technical concept that an m-aramid is preferred to a p-aramid as a material for a porous film cannot be derived. The arguments are not persuasive for patentability because they are not relevant to the basis of the finding of obviousness that is highlighted in the Office Action. Shinohara discloses a porous film as a battery separator comprising a heat resistant polymer and a ceramic powder wherein the heat resistant polymer includes both meta-oriented aromatic polyamide and para-oriented aromatic

polyamide (column 3, lines 40-55). Shinohara discloses the para-oriented aromatic polyamide is preferable because it tends to become porous (column 3, lines 55-56). The preference that is given to para-aramid does not necessarily imply the exclusion of meta-aramid from the porous film. Additionally, the preference is a piece of evidence which is sufficient to demonstrate that Shinohara was the first one before the Applicants who had invented the use of meta-aramid for the preparation of the porous film. Shinohara does not specifically disclose that polymetaphenylene isophthalamide is the meta-aramide. Cieslak, however, discloses a battery separator made from polyparaphenylene terephthalamide and polymetaphenylene isophthalamide (column 3, lines 35-37). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use polymetaphenylene isophthalamide as meta-oriented aromatic polyamide because such is intended use of the material and Cieslak provides necessary details to practice the invention of Shinohara. Further, it is technically correct that the combination of Shinohara and Cieslak does not suggest that an m-aramid is preferred to a p-aramid for a porous film. However, the combined teachings of the two cited references do not exclude a porous film that is comprised of polymetaphenylene isophthalamide. This reads on the claimed subject matter and accordingly, the art rejections are sustained.

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hai Vo whose telephone number is (571) 272-1485. The examiner can normally be reached on Monday through Friday, from 9:00 to 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel Morris can be reached on (571) 272-1478. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

HV

Hai Vo

HAI VO
PRIMARY EXAMINER